



A MECHANISM TO REDUCE WASTE DUE TO VOLTAGE DIPS IN NARROW FABRIC LOOMS

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Abstract

Like any other industry, apparel industry too tries to minimize their product cost by reducing production waste. Voltage fluctuations and power failures are two of the most concerning factors affecting the production. Even though these voltage fluctuations & voltage failures affect different kinds of looms at different degrees, its effect on the weaving looms which manufacture elastics is severe. As a narrow fabric elastic manufacturer it has been faced difficulties in minimizing the number of joints in the fabric (tape), which is a direct consequence of the same.

There are no research papers or commercial devices found to minimize the fabric joints in case of voltage dips or short period voltage interruptions. The significance of the proposed system is its ability to sense the voltage dips/sags or interruption with the fast AC to DC converter and take decisions intelligently to suit the situation prevailed, e.g. whether to let the machine run or stop depending on the time elapsed.

The brain of the controller is a micro-peripheral interface controller (PIC) and is programmed as assembly language. MPLAB Software compiles assembly to hex codes and the required sequence of signals is generated from PIC. This signal is sent to control unit of the loom via the DPDT relay to hold down the control switches to perform the controller operations of the looms within a 3 second period during the short-time voltage variations such as interruptions and dips.

Numerous other applications are possible with this system in other industries too. One is in the rubber extruder and another is mixing mill in manufacturing rubber tires.